CLAIMS

What is claimed is:

1.   A cutting machine comprising:

a lead screw assembly having a tool holder;

first and second motors; and

a coupling assembly interconnecting the first and second motors to the lead screw assembly for selectively transmitting rotational drive from the first and second motors to the lead screw assembly, the coupling assembly having a first engaged condition rotationally coupling the first motor to the lead screw assembly moving the tool holder in a first direction, and a second engaged condition rotationally coupling the second motor to the lead screw assembly moving the tool holder in a second direction opposite the first direction.

2.   The cutting machine according to claim 1, wherein the first and second motor each include a rotational axis with the rotational axes parallel to one another.

3.   The cutting machine according to claim 2, wherein the rotational axes are parallel to a lead screw assembly axis.

4.   The cutting machine according to claim 1, wherein the coupling assembly includes first and second clutch/brakes respectively interconnected between the first and second motors and the lead screw assembly.

5.   The cutting machine according to claim 4, wherein the coupling assembly includes first and second drive sprockets respectively receiving rotational drive from the first and second clutch/brakes.

6.   The cutting machine according to claim 5, wherein the coupling assembly includes first and second driven sprockets supported on the lead screw assembly respectively coupled to the first and second drive sprockets by first and second belts.

7.   The cutting machine according to claim 4, wherein each of the clutch/brakes includes a double-acting piston movable between a clutch position and a brake position.

8.   The cutting machine according to claim 1, wherein the first and second motors are simultaneously rotationally driven with the tool holder moving between the first and second directions.

9.   The cutting machine according to claim 8, wherein the coupling assembly includes at least one clutch/brake, and a controller commands the at least one clutch brake to obtain at least one of the first and second engaged condition.

10.   The cutting machine according to claim 9, wherein lead screw assembly position sensors are connected to the controller providing lead screw assembly position information, the controller commanding at least one clutch brake in response to the lead screw assembly position information.

11. A cutting process comprising the steps of:

a) simultaneously rotating first and second drive motors;

b) manipulating a coupling assembly transferring rotation from the first drive motor to a tool holder;

c) moving the tool holder in a first direction;

d) manipulating the coupling assembly terminating transfer of rotation from the first drive motor to the tool holder and transferring rotation from the second drive motor to the tool holder; and

e) moving the tool holder in a second direction opposite the first direction.

12. The process according to claim 11, wherein step b) is performed in response to detecting a part to be machined.

13. The process according to claim 12, wherein step c) move the tool holder toward the part to be machined.

14. The process according to claim 13, wherein step d) is performed in response to detecting a forward stroke position.

15. The process according to claim 12, wherein step b) is performed in response to detecting a rearward stroke position.

16. The process according to claim 11, wherein step d) is performed in response to an overrun stroke position.

17. The process according to claim 11, wherein a lead screw is arranged between the tool holder and the first and second drive motors.

18. The process according to claim 17, wherein first and second clutch/brakes respectively are arranged between the first and second drive motors and the lead screw.

19. The process according to claim 18, wherein steps b) and d) are performed by actuating a double acting piston in at least one of the clutch/brakes.